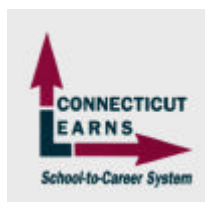


Industry Skills Standards

Jobs and Skill Requirements for Entry-Level Workers 2000-2005

A project of the
Connecticut Business & Industry Association,
in collaboration with the
School-to-Career Partnership
of the State Departments of Education, Higher
Education and Labor.



The CBIA Industry Skills Standards

Foreword

In 1994, CBIA was asked by the Connecticut State Department of Education to develop a series of eight booklets representing the academic, employability, and technical skills that employers in our state needed from graduates of our secondary and post-secondary schools. The eight booklets are:

- Arts and Media
- Business and Finance
- Construction, Technologies, and Design
- Environmental, Natural Resources, and Agriculture
- Government, Education, and Human Services
- Health and Biosciences
- Retail, Tourism, Recreation, and Entrepreneurial
- Technologies: Manufacturing, Communications, and Repair

We have now completed the process of condensing and developing updated booklets for 2000-2005, which will become the revised requirements for the Connecticut Career Certificate. Rather than eight separate books, this one book provides the core academic and employability skills common to all eight clusters and the jobs and technical skills specific to each cluster. The book provides the job categories, job titles, and entry-level skills that employers believe will be in demand over the next five years.

This new booklet contains:

- The core academic and employability skills common to all eight career clusters, expected of high school graduates.
- A crosswalk of the core list to SCANS competencies and CAPT competencies.
- Job categories and samples of jobs for each cluster for high school graduates, 2-year associate's degrees, bachelor's and advanced degrees.
- Technical skills specific to each cluster at the high school and 2-year-associate degree level.

The revised job categories/jobs and skill requirements represent input received from professionals in each field. The academic and employability skill requirements have been reorganized and condensed, based on the feedback of educators and industry personnel. The technical sections have also been redesigned and edited to be more concise and to make it easier for users to read. The technical skills are still specific to each cluster.

While the skills outlined are for graduates with a high school diploma/associate's degree leading to the Connecticut Career Certificate (CCC), jobs requiring bachelor's and advanced degrees are also included for students to see the range of career opportunities available in each cluster.

Observations and Themes Related to the Revised Skills Standards Project

Career professionals continue to note a growing number of jobs in small and mid-sized companies throughout the state, particularly in the manufacturing and information technology fields. While the job skills required vary across job categories and clusters, it is clear that analytical and problem-solving skills, strong basic skills and good communication and teamwork skills are requisite to all jobs. Technology and the importance of computer literacy and proficiency for all students is important to succeed in almost all career choices. Technology is used differently depending on the company and industry, but all companies are requiring computer skills in all types of employees.

Finally, strong employability skills, a work ethic and positive attitude are critical for career success regardless of the industry.

There continues to be a movement away from bureaucratic, hierarchical structures where all decisions are made at the top and workers carry them out. The idea is to flatten and decentralize decision making, with workers at all levels in the organization making decisions, solving problems, and meeting internal and external customer needs.

Flexibility and adaptability continue to be hallmarks of the successful career professional today. Because of the changing nature of businesses and our economy, an individual no longer works for the same company until retirement. It is now considered the norm for people to change jobs five to seven times over the course of their working careers.

More than ever, the world has become a smaller place because of the overwhelming influence of the Internet and e-commerce. We do everything faster now, from international trade to communication between grammar school students who live on opposite sides of the globe. By forging partnerships and joint ventures with foreign companies, the United States has gained entrance into foreign markets, just as foreign companies are operating all types of facilities in the United States. This globalization has provided employment opportunities for individuals who, in addition to their technical skills, have learned a foreign language.

We urge students and educators to look through all the clusters to see the broad range of jobs and the connections between the clusters. For example, your interests and skills might lead you to an accounting or office job, but you might prefer using those skills in a fast-paced manufacturing environment rather than an insurance company. Or, you might be a trained nurse who prefers to work in an insurance company rather than a hospital, or an environmental technician who is hired by an insurance company to travel around the world monitoring claims.

The possibilities are endless, and we hope students will find this information useful as they begin to explore career options. For educators, business people and parents, we hope this information will serve as a way to begin a dialogue on the expectations businesses have for students' performance in the rapidly changing business environment.

CONNECTICUT'S SCHOOL-TO-CAREER CORE ACADEMIC AND EMPLOYABILITY SKILL REQUIREMENTS FOR ALL EIGHT CLUSTERS

Academic Skills

Language Skills – Reading

- Locate and use reference materials
- Sequence information
- Compare and contrast information
- Interpret technical documents, manuals and tables
- Identify main and subordinate ideas
- Cross-reference information
- Follow directions
- Identify cause and effect relationships
- Draw conclusions from facts
- Predict consequences
- Interpret abbreviations, symbols and graphs

Language Skills – Writing

- Organize and relate ideas
- Develop preliminary outline
- Use standard grammar and punctuation
- Create clear memos and letters
- Proofread and edit
- Complete forms and applications
- Take notes
- Create and interpret graphs and charts
- Understand basic conversations in a foreign language

Communications Skills

- Exchange ideas and present ideas clearly
- Active listening
- Ask and answer questions
- Organize and express directions in logical sequence
- Convey thoughts upward, downward and laterally
- Distinguish between relevant and irrelevant
- Identify cause and effect
- Explain conclusions
- Explain consequences
- Apply data analysis to job tasks
- Demonstrate interviewing skills
- Use appropriate body language
- Demonstrate telephone skills
- Use proper English and tone of voice

Mathematics

- Add, subtract, multiply and divide whole numbers, decimals, fractions & mixed numbers
- Convert decimals fractions, ratios & percentages
- Conduct linear, area, volume capacity & weight measurements
- Calculate ratios and proportions
- Estimate to nearest whole numbers
- Apply statistical principles
- Apply algebraic principles
- Apply geometric principles
- Identify trends from data
- Create and interpret tables and graphs
- Use calculator
- See relationships

Sciences

- Demonstrate basic understanding of a scientific discipline
- Demonstrate basic understanding of scientific processes and principles
- Demonstrate understanding of maps

Thinking-Problem-solving Skills

- Ability to make judgments re: validity of data
- Conceive ideas
- Formulate answers to problems
- Identify key information pertinent to problems
- Draw conclusions from information
- Predict outcomes
- Develop an action plan
- Evaluate impact of solution
- Understand systems and key components
- Ability to think independently (“out of the box”)

Computer Knowledge

- Operate a personal computer
- Have keyboarding skills
- Use word processing and spreadsheets
- Use database software
- Use e-mail
- Use Internet for research
- Create document storage & import documents

Core Employability Skills

Personal Attributes

- Takes initiative
- Assumes responsibility
- Displays a good self-concept
- Persists until job is done
- Works well without supervision
- Takes responsibility for production/quality
- Conflicts do not impede performance
- Seeks new challenges
- Applies ethics to behavior
- Responds well to criticism
- Maintains a professional image
- Works well under stress
- Displays positive behaviors
- Follows instructions
- Adheres to code of conduct
- Adheres to attendance policy
- Dresses appropriately for position
- Appreciates diversity/differences

Customer Service Skills

- Adopts a customer service orientation inside and outside the organization
- Gathers information from various sources to identify prospective customers/markets
- Communicates with customer in a professional manner
- Maintains accurate and complete information about customers
- Documents and processes customer information/orders
- Interprets customer information to identify needs
- Offers options to problems and negotiates solutions
- Shows customers how to implement and monitor plans and take action whenever necessary
- Identifies new customer needs
- Informs customers when needs cannot be met and why
- Makes alternate recommendations
- Analyzes customer feedback to improve internal customer support process

Team Work

- Works effectively in a team
- Follows instruction
- Takes initiative
- Provides support to others
- Fosters innovation
- Demonstrates leadership and actively participates

Adaptability

- Accepts changes
- Performs multiple assignments
- Shows flexibility
- Handles multiple tasks simultaneously
- Adapts skills to new tasks
- Ability and willingness to learn

Academic Skills Measured by CAPT

<u>CAPT</u>	<u>Language Skills – Reading</u>	<u>CAPT</u>	<u>Mathematics</u>
Y	▪ Locate and use reference materials	Y	▪ Add, subtract, multiply and divide whole numbers, decimals, fractions & mixed numbers
Y	▪ Sequence information		
Y	▪ Compare and contrast information	Y	▪ Convert decimals, fractions, ratios & percentages
Y	▪ Interpret technical documents, manuals	Y	▪ Conduct linear, area, volume capacity & weight measurements
Y	▪ Identify main and subordinate ideas	Y	▪ Calculate ratios & proportions
Y	▪ Cross-reference information	Y	▪ Estimate to nearest whole numbers
Y	▪ Follow directions to achieve an objective	Y	▪ Apply statistical principles
Y	▪ Identify cause and effect relationships	Y	▪ Apply algebraic principles
Y	▪ Draw conclusions from facts	Y	▪ Apply geometric principles
Y	▪ Predict consequences	Y	▪ Identify trends from data
Y	▪ Interpret abbreviations, symbols and graphs	Y	▪ Create and interpret tables and graphs
		Y	▪ Use calculator
<u>CAPT</u>	<u>Language Skills – Writing</u>	<u>CAPT</u>	<u>Thinking, Problem-solving Skills</u>
Y	▪ Organize and relate ideas	Y	▪ Conceive ideas
Y	▪ Develop preliminary outline	Y	▪ Formulate problems
Y	▪ Use standard grammar and punctuation	Y	▪ Identify key information pertinent to problems
Y	▪ Create clear memos and letters		
Y	▪ Proofread and edit	Y	▪ Draw conclusions from information
N	▪ Complete forms and applications	Y	▪ Predict outcomes
Y	▪ Take notes	N	▪ Develop an action plan
Y	▪ Create and interpret graphs and charts	N	▪ Evaluate impact of solution
<u>CAPT</u>	<u>Communication Skills</u>	<u>CAPT</u>	<u>Computer Knowledge</u>
Y	▪ Exchange ideas	N	▪ Operate a personal computer
Y	▪ Ask and answer questions	N	▪ Have keyboarding skills
Y	▪ Organize and express directions in logical sequence	N	▪ Use word processing software
		N	▪ Use specialized software
Y	▪ Convey thoughts upward, downward	N	▪ Use database software
Y	▪ Comprehend ideas and instructions	N	▪ Use CD-ROMS
Y	▪ Follow directions to achieve an objective	N	▪ Establish document storage
Y	▪ Use appropriate body language	N	▪ Use computer communications
Y	▪ Distinguish between relevant and irrelevant information	N	▪ Use computer to format
		N	▪ Use computer bookkeeping
Y	▪ Identify cause and effect information	N	▪ Enter simple data
Y	▪ Infer meaning	N	▪ Apply computer to job tasks
Y	▪ Draw conclusions		
Y	▪ Predict consequences		
Y	▪ Apply data analysis to job tasks		
N	▪ Demonstrate interviewing skills		
N	▪ Demonstrate telephone skills		
<u>CAPT</u>	<u>Sciences</u>		
Y	▪ Demonstrate basic knowledge of biology		
Y	▪ Demonstrate basic knowledge of chemistry & physics		

Employability Skills (not measured by CAPT)

Personal Attributes

- Takes initiative
- Assumes responsibility
- Displays a good self-concept
- Persists until job is done
- Works well without supervision
- Takes responsibility for production/quality
- Conflicts do not impede performance
- Seeks new challenges
- Applies ethics to behavior
- Responds well to criticism
- Maintains a professional image
- Works well under stress
- Displays positive behaviors
- Follows instructions
- Adheres to code of conduct

Team Work

- Works effectively in a team
- Follows instruction
- Takes initiative
- Provides support to others
- Fosters innovation
- Manages relationships

Adaptability

- Accepts change
- Performs multiple assignments
- Shows flexibility
- Adjusts style to the situation
- Handles multiple tasks simultaneously
- Adapts skills to new tasks

Academic Skills**SCANS Competencies****Language Skills-Reading**

- Locate and use reference materials
- Sequence information
- Compare and contrast information
- Interpret technical documents, manuals and tables
- Identify main and subordinate ideas
- Cross-reference information
- Follow directions to achieve an objective
- Identify cause and effect relationships
- Draw conclusions from facts
- Predict consequences
- Interpret abbreviations, symbols and graphs

- Locate, understand and interpret written information including manuals, graphs and schedules
- Learn from text by determining the main idea or essential message
- Identify relevant details, facts and specifications
- Infer or locate the meaning of unknown or technical vocabulary
- Judge the accuracy, appropriateness, style and plausibility of reports, proposals or theories of other writers

Language Skills- Writing

- Organize and relate ideas
- Develop preliminary outline
- Use standard grammar and punctuation
- Create clear memos and letters
- Proofread and edit
- Complete forms and applications
- Take notes
- Create and interpret graphs and charts

- Communicate thoughts, ideas, information and messages in writing
- Record information completely and accurately
- Compose and create documents such as letters, directions, manuals, reports, proposals, graphs and flow charts with the language, style, organization and format appropriate to the subject matter, purpose and audience
- Include, where appropriate, supporting documentation
- Attend to level of detail
- Check editing and revise for correct information, appropriate emphasis, form, grammar, spelling and punctuation

Communication Skills

- Exchange ideas
- Ask and answer questions
- Organize and express directions in logical sequence
- Convey thoughts upward, downward and laterally
- Comprehend ideas and instructions
- Follow directions to achieve an objective
- Use appropriate body language
- Distinguish between relevant and irrelevant information
- Identify cause and effect information
- Infer meaning
- Draw conclusions
- Predict consequences
- Apply data analysis to job tasks
- Demonstrate interviewing skills
- Demonstrate telephone skills

- Receive, attend to, interpret and respond to verbal messages and other cues such as body language in ways that are appropriate to the purpose
- Organize ideas and communicate oral messages appropriate to listeners and situations
- Participate in conversation, discussion and group presentation
- Select an appropriate medium for conveying a message
- Use verbal language and other cues such as body language in a way appropriate in style, tone and level of complexity to the audience and occasion
- Speak clearly and communicate a message
- Understand and respond to listener feedback
- Ask questions when needed

Academic Skills	SCANS Competencies
<u>Mathematics</u> <ul style="list-style-type: none"> ▪ Add, subtract, multiply and divide whole numbers, decimals, fractions & mixed numbers ▪ Convert decimals fractions, ratios & percentages ▪ Conduct linear, area, volume capacity & weight measurements ▪ Calculate ratios and proportions ▪ Estimate to nearest whole numbers ▪ Apply statistical principles ▪ Apply algebraic principles ▪ Apply geometric principles ▪ Identify trends from data ▪ Create and interpret tables and graphs ▪ Use calculator 	<ul style="list-style-type: none"> ▪ Perform basic computations ▪ Use basic numerical concepts such as whole numbers and percentages in practical situations ▪ Make reasonable estimates of arithmetic results without a calculator ▪ Use tables, graphs, diagrams and charts to obtain or convey quantitative information ▪ Approaches practical problems by choosing appropriately from a variety of mathematical techniques ▪ Use quantitative data to construct logical explanations for real world situations ▪ Express mathematical ideas and concepts orally and in writing ▪ Understand the role of chance in the occurrence and prediction of events
<u>Sciences</u> <ul style="list-style-type: none"> ▪ Demonstrate basic understanding of biology ▪ Demonstrate basic understanding of chemistry and physics 	
<u>Thinking - Problem-solving Skills</u> <ul style="list-style-type: none"> ▪ Ability to make judgments re: validity of data ▪ Conceive ideas ▪ Formulate answers to problems ▪ Identify key information pertinent to problems ▪ Draw conclusions from information ▪ Predict outcomes ▪ Develop an action plan ▪ Evaluate impact of solution 	<ul style="list-style-type: none"> ▪ Generate new ideas ▪ Specify goals, generate alternatives, consider risks and choose best alternatives ▪ Problem-solving ▪ Ability to see things in mind's eye – mental visualization ▪ Ability to know how to learn and use learning Techniques
<u>Computer Knowledge</u> <ul style="list-style-type: none"> ▪ Operate a personal computer ▪ Have keyboarding skills ▪ Use word processing software ▪ Use specialized software ▪ Use database software ▪ Use CD-ROMS ▪ Establish document storage ▪ Use computer communication ▪ Use computers to format ▪ Use computer bookkeeping ▪ Enter simple data ▪ Apply computers to job tasks 	<ul style="list-style-type: none"> ▪ Select technology by judging which set of procedures computers and their programs will produce a desired result ▪ Apply technology to a task ▪ Maintain and troubleshoot technical problems ▪ Use computers to process information

Employability Skills

SCANS Competencies

Personal Attributes

- Takes initiative
- Assumes responsibility
- Displays a good self-concept
- Persists until job is done
- Works well without supervision
- Takes responsibility for production/quality
- Conflicts do not impede performance
- Seeks new challenges
- Applies ethics to behavior
- Responds well to criticism
- Maintains a professional image
- Works well under stress
- Displays positive behaviors
- Follows instructions
- Adheres to code of conduct

Team Work

- Works effectively in a team
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- Takes initiative
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- Fosters innovation
- Manages relationships

Adaptability

- Accepts change
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- Shows flexibility
- Adjusts style to the situation
- Handles multiple tasks simultaneously
- Adapts skills to new tasks

- Responsibility
- Self-esteem
- Sociability
- Self-management
- Integrity and honesty
- Allocate: time, money, human resources and material and facility resources
- Participate as a member of a team
- Teach others
- Serve clients/customers
- Exercise leadership – communicate to justify a position, persuade others
- Negotiate to arrive at a decision
- Work with cultural diversity
- Acquire and evaluate information
- Organize and maintain information
- Interpret and communicate information
- Use computer to process information
- Understand systems – know how social, organizational and technological systems work and operate effectively within them
- Monitor and correct performance by distinguishing trends, predict impacts of actions on system operations, diagnose deviations in the functioning system and take necessary action to correct performance
- Improve and design systems by making suggestions to modify existing system in order to improve the quality of products or services and develop new or alternative systems.

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